

Impact of New Technology on Music Industry

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Abstract. With the continuous development of the music industry today, coupled with the advancement and innovation of science and technology, it is now common to witness the integration of technology and music across the whole music field. This article will explore the impacts of technological development manifested across multiple dimensions of music, thereby elucidating the significance of technological innovation for the operation of the music industry. The conclusions in this article ultimately include that technological innovations and breakthroughs have exerted a profound impact on the music industry, and that they are intertwined with every practitioner involved in this industry, and even with consumers of the music industry. Whether in the past or the present, the presence or absence of epoch-making technological innovations has resulted in distinctly different operational business models for the music industry. This paper will benefit those who are interested in the development of music industry and contribute to the future development of the industry.

Keywords: Income, Music Creation, Consumption, Music Industry, Technological Innovation.

1. Introduction

Music is an intangible asset. Unlike products in other industries, it primarily relies on sound to convey its commercial value. Every participant in the music industry is constantly integrating with the trends of the times to enhance the value of this intangible asset of their own. Moreover, the operating model of the music industry is not singular. Each specific music sector faces distinct development opportunities and business prospects [1]. However, on the other hand, all these sectors complement one another and collectively form a complete music industry.

In the 21st century, high and new technologies continue to develop and make breakthroughs, and artificial intelligence has become a major global focus [2]. The profit-making model of music is quite different from what it used to be [3]. Relying on the sales of physical records and albums is no longer the most mainstream profit method. Nowadays, major music platforms have risen, and their user bases continue to expand. The copyrights of many songs have also been widely purchased and used in well-known film and television works, and live concerts have become a powerful profit channel as well [4]. These all represent the unique value embodied by technological innovation in the music industry.

This article focuses on three important components of the music industry: income, music creation, and consumption. It discusses and analyzes the impact of technological innovation on each

of these aspects, as well as how they operated in the past. At the end of the analysis, several suggestions are also put forward. The purpose is to enable the music industry to continue its positive development and make good use of the benefits and advantages brought by technology.

2. Effects of technology on music industry

Nowadays, with the continuous evolution and development of new technologies, the global music industry has moved into a massive streaming era. From an economic perspective, the following essay will analyze this industry and offer some insights into how economy has been impacted compared with before.

2.1. Income

"Income" is a term which is familiar to everyone. So, with the emergence of new technologies, will this have impacts on the original overall income structure and distribution in the music industry? In the past, for instance, the music industry was still a traditional one back in the last century. During that time when rock music emerged and swept the globe, most top-tier rock bands like The Beatles derived their income primarily from record sales. Every time when they release a whole new album there will be sensational popularity among their fans all over the world, the sales of their albums could play an essential and large part in their income. Meanwhile, their songs would also be played on popular radio stations or in advertisements of that time, which would generate royalty income. Besides, holding live concerts was also a major source of their income. However, their income usually had to be split and separated by their financial company. Compared with album releases and sales, the revenue from concerts was significantly reduced. But overall, during that time, album sales were significant, even the primary source of income for artists [5].

Next, is the analysis of today's modern music industry. Numerous well-known streaming media have already fully permeated the music industry. It is shown that musicians can earn income by putting their songs on these platforms. Currently, the number of global users of music streaming download platforms has reached tens of millions or more, and this is likely to continue growing in the future [6]. At this point, it is also necessary to mention an economic concept in the music industry called the "superstar economy [4]." The integration of this concept with income owes much to the role of streaming dissemination. Through streaming platforms, the songs of globally phenomenal artists can reach an infinitely large audience of listeners on these platforms. Both streaming plays and live performance revenues tend to go to the world's top-tier superstars. It's evident how income is distributed across the entire music market under the effect of the superstar economy. Moreover, looking at the play counts on major music platforms, the number of plays for songs and music videos by the world's top artists is astonishing. Therefore, earning income through streaming media has clearly become the primary source of income now. However, the platforms also take a substantial cut of artists' earnings [7]. Besides, there is a big income gap between the A-list artists and other artists.

2.2. Creation

In the previous subsection, it mentioned the impact of the transformation and application of new technologies on the income of artists in the music industry. Now, what is going to be discussed is: what impact have they had on music creation? For artists, music creation is undoubtedly an extremely important aspect. In the 1960s, there was no multi-track recording technology yet. Bands

could only use single-track or double-track recorders in recording studios, and singers were required to complete the performance for only one chance, just like a "live broadcast". Moreover, all musical instruments were recorded simultaneously at that time, and if there was any mistake, everything had to be redone. What's more, there was almost no post-processing after the recording, such as multi-track overlaying or editing. However, this kind of past creative method usually involved high costs for venues and equipment, as well as the financial pressure from having to engage a professional team [8]. Besides, if a recording attempt was unsuccessful, the adjustments might cost several days of recording studio fees. Moreover, in terms of the distribution of creative rights, there are issues such as inequality in copyright and profit sharing [1]. In addition, many independent artists can produce works of professional quality on their own without the need for large production teams [9]. With the assistance of artificial intelligence, their creative efficiency has also been significantly improved as well. Moreover, many music productions can even be recorded online and then directly released on social platforms such as Tiktok. With the maturity of the aforementioned multi-track recording technology, the fault tolerance rate for artists' songs has been greatly improved, and the cost of trial and error is almost zero. Artists can complete multiple version iterations within a few hours. In terms of copyright, independent creators can retain the complete copyright of their works and directly monetize them through streaming media, without having to pay relevant "cost deductions" to record companies [7]. Additionally, fan subscription services can serve as relatively stable sources of income for artists. Social media also enables works of different styles to find their appropriate audiences, allowing for the accumulation of fans and revenue through the "long-tail effect" [6].

Nowadays, music creation often involves an economic concept called cost-benefit analysis. If the performance of a new song release is disappointing, record companies will analyze the current market conditions and public aesthetic trends to position the band's songs more carefully and clearly. This is because public tastes, or rather the demands influenced by tastes, generally could change flexibly over time, making it difficult to control and predict works that best fit the public's preferences and psychology [10]. Therefore, it usually requires record companies and artists to invest a lot of time in the early stage to explore and accumulate creative experience, trying their best to grasp the mainstream aesthetics that conform to the trend, so as to ensure that the revenue brought by the final work is as much as possible greater than the cost, that is, to match supply with demand. If an album becomes popular and sells well as soon as it is released, record companies and record stores will consider raising the price, because demand has exceeded supply, in this way they can ensure the highest possible revenue with a limited number of albums. Moreover, in such cases, fans usually regard the album as a necessity rather than a luxury, so the demand elasticity is very low. Raising the price will naturally bring more revenue, because you really have to buy the album, even if the price is much higher. At this point, although the company has invested a lot in market research and production costs, it will quickly recover this money and even more by leveraging the relationship and characteristics between supply and demand. Nowadays, the cost for artists to release a song has obviously dropped a lot [11]. They no longer need a lot of professional and essential equipment to help them complete their work, so the cost in this respect has dropped significantly as well. Moreover, thanks to the massive number of users and the reduced demand elasticity, the view counts the song gets will definitely exceed the cost of its release and production. Additionally, by building a unique connection with fans based on "customer loyalty"-one aspect of demand-artists may set up their own music accounts to keep releasing works that are loved by the fans. For fans whose demand for their songs is almost inelastic, they will usually continue to follow them and contribute to the revenue of the singer's songs. That's why many artists now have their

own independent social media accounts instead of relying entirely on record companies for promotion. Another point I want to mention is that the emergence of streaming has given more users the opportunity to create and achieve their musical dreams, which has had a positive external effect on the creation and performance of the entire music industry [12]. As social media has made many bloggers popular, many people have begun to regard streaming media as a platform for their own career development. They learn musical skills, release their works on social media, and gain support and likes. This makes more people fall in love with music and pay more attention to it, which is undoubtedly a positive influence. However, due to system vulnerabilities in music platforms and other issues, the copyright of many songs is stolen, thus harming the rights of original creators [13]. For example, many people upload videos, and other works are stolen by other users. This is damaging to both original creators and the platforms, so apart from positive externalities, there are also negative ones. To prevent such incidents, music platforms have also increased costs for copyright protection. However, such issues can never be completely avoided. Therefore, in this regard, the costs of streaming platforms in the music industry may outweigh the benefits [13]. To sum up, the music industry operates under a market economy, so its response to demand is crucial.

2.3. Consumption

In the previous two subsections, it analyzed the impact of new technological developments on the industry from the perspective of musicians. For a consumer, it would be another matter. First, back in the era when rock music was popular in the last century, if a band wanted to become famous, they needed to sign with a well-known record company. The company would handle music production, and other tasks, and finally distribute the music to various terminals to reach the public. Behind the success of the singers was the record company's absolute control over production, packaging, and global distribution. Records and radio were the primary music dissemination media of that era, providing the public with important music channels and expanding the scope of music transmission [3]. For consumers, they could own their favorite music by buying records, which satisfied their needs for music collection and repeated listening. At the same time, radio broadcasting music gave consumers more opportunities to be exposed to new music, influencing their musical preferences and choices [4]. However, access to music was relatively limited back then. Consumers mainly relied on record stores and radio, and their range of choices was largely affected by geographical location and radio program schedules. With the development of the record industry and the concept of the album, consumers were no longer limited to buying single songs. Instead, they could enjoy a series of songs created around a specific theme or style, thus gaining a more complete musical experience. At the present, music video platforms like YouTube allow music to be presented in video form, combining visuals with audio to attract more viewers, and some popular music videos can reach billions of views [6]. There's no denying that consumers no longer need to buy physical records [14]; they just need to pay a relatively low regular subscription fee to streaming platforms to enjoy basically all the hit songs. What's more, it is not just that the consumers themselves-their friends, family, colleagues, and others around them also get the chance to be increase in production quantity at the same time [12].

The dissemination of music is often accompanied by relevant economic principles. One of them could be economic scale, which is the principle applies to the music industry. In the past, when relying solely on records to reach more listeners, the production cost per album might decrease with the increase in production quantity [5]. However, if the released album receives a poor response in the consumer market, its sales are likely to drop significantly, and the demand for this album will also increase. If the price of the album remains unchanged, sales will continue to decline, and it may

even fail to cover the production costs in the later stage. Moreover, in that era, the process from the release of an album to receiving market feedback was relatively long. The time wasted during this period is an invisible sunk cost that can never be recovered. However, in contrast to the present, artists have more autonomy over the release of their songs, and the cost of releasing music on streaming platforms is far lower than that of producing a physical album nowadays [11]. Moreover, whether the song is popular or not, the cost incurred by the artist is basically the same. Whether a song gets one million or ten million plays, its production cost remains fixed. And as a song becomes more and more popular on the social network, its global plays and attention will increase. While viewed by many people, the unit cost also decreases [14]. In addition, economies of scale are definitely applicable to fans as well. Previously, each fan had to bear the price of a single album, and the price of the album was not directly related to the quantity purchased. That is to say, no matter how many albums you bought, the price was probably the same. However, for music on streaming platforms, the platform can spread the cost of music across millions or more users. Each user only needs to pay a relatively low subscription fee to enjoy unlimited music. This approach allows a huge number of users to cover the costs incurred by the platform and even generate more revenue compared with before. As a result, economies of scale can minimize the costs of streaming media [6]. Therefore, if the goal is to maximize the degree and effect of economies of scale, today's streaming media technologies and artificial intelligence are better than traditional physical records. Because they are more likely to reduce the unit cost to a lower level which is a huge improvement for the costs of music industry.

3. Suggestions

This paper provides the following suggestions: Artists can diversify their income sources and expand their revenue channels. To be more specific, artists can leverage streaming platforms and pay attention to their revenue-sharing mechanisms [7]. Secondly, given that live performances have become one of the main sources of income for artists, reasonable operational plans should be made based on demand elasticity. Companies can strengthen the planning and innovation of live performances, allocate costs to areas with more commercial value, and make optimal choices. Additionally, extra income can be generated through the loyalty of fans by selling performance peripherals and other related products in the market [4].

When it comes to music creation, although artificial intelligence is becoming more and more popular, artists should still stick to their original intention in creation, rather than gradually entrusting the dominance of creation to artificial intelligence. Artists can reasonably use AI to improve their creative efficiency, but the emotional depth and personal aesthetics of the entire song are still could only be best handled by the artists themselves. By the way, artists should also be aware of copyright protection. They need to clarify the definition of rights and responsibilities for AI-generated works to protect their own copyright revenue [13].

Nowadays, in addition to music platforms and social media, artists can also improve their works based on precise algorithms and data from music platforms, making their songs more in line with the needs of the target audience [2]. Because the core is to align their works with the market demand to reach a market balance (music supply equals demand). In addition to artists improving their own music dissemination channels, music platforms can also optimize their services to provide each user with a better and more comprehensive personalized experience. At the same time, more value-added services can be launched as well, such as high-quality sound and exclusive album previews which aim to meet the needs and tastes of different groups of consumers. Consumers' rights and interests should also be protected by law to provide them with a more stable music-listening experience. In

this situation, music platforms can strengthen copyright management, maintain and improve the consumption system of the music industry [13]. Moreover, it is necessary to fully consider that the relationship between cost and benefit will not be fixed under different aspects and different market environments, it depends more on different factors [15].

4. Conclusions

Currently, modern technology has achieved remarkable progress and outcomes, and the music industry has also entered a new era. The emerging model of combining music with technology has become a prevalent business model. For artists, they leverage the opportunities brought by technology for profit and creation, while consumers also benefit from technological innovation. They can enjoy the pleasure brought by music at a lower cost that might have been unimaginable in the past, and more consumers can meet their diverse needs. For instance, VR technology allows fans to experience the atmosphere of a concert and the singing of their idols even when they are not present at the venue. Overall, technological innovation has exerted a tremendous impact on the music industry.

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